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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/774,330
Filing Date: January 31, 2001
Appellant(s): JONES ET AL.

Stephen A. Terrile (Reg. No. 32,946)
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed November 28, 2005 appealing from the Office action mailed June 29, 2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal:

None

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

No evidence is relied upon by the examiner in the rejection of the claims under appeal.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-6 and 8-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukhopadhyay ("Optimal Scheduling of Just-in-Time Purchase Deliveries").

Mukhopadhyay discloses a method for scheduling delivery of material to a manufacturer comprising:

[Claim 1] determining a material requirement for an operation of at least one operation on a manufacturing line, the material requirement being based upon customer orders, the determining being performed by a module executing on a computer system (¶ 7 -- "The plant manufactures power transformers for industries and utility companies"; therefore, all manufacturing is performed in response to customers orders. In other words, the nature of the customer orders establishes the material requirement, especially in a just-in-time, or "pull", environment; Mukhopadhyay discloses that the breakdown of parts required and delivery schedules are sent to the suppliers daily (¶¶ 7, 48) and the scheduling is optimized using a PC (¶¶ 8, 14, 46, 48); therefore, it is understood that a processor and memory are used to perform the recited functionality); and

scheduling delivery of material to meet the material requirement from an available inventory of material to the operation on the manufacturing line, the scheduling being performed by a module executing on a computer system (¶¶ 7, 48; Mukhopadhyay discloses that the breakdown of parts required and delivery schedules are sent to the suppliers daily (¶¶ 7, 48) and the scheduling is optimized using a PC (¶¶

8, 14, 46, 48); therefore, it is understood that a processor and memory are used to perform the recited functionality);

[Claim 2] wherein the material requirement includes identified material and a material need-by time (¶¶ 7, 48); and

the scheduled delivery of the material includes scheduled delivery of the identified material prior to the material need-by time (¶¶ 7, 48);

[Claim 3] sending a material request for the material to meet the material requirement to a material source having the material (¶¶ 7, 48); and

wherein the material source is scheduled to deliver the material to meet the material requirement from the available inventory of material to the operation (¶¶ 7, 48);

[Claim 4] wherein the material request includes a plurality of materials to meet a plurality of material requirements to be delivered by the material source, with each material requirement of the plurality of material requirements to be delivered at a specified material delivery time (¶¶ 7, 48);

[Claim 5] wherein the available inventory includes at least one of a group consisting of:

an external inventory; and

an in-house inventory (¶ 7 – External deliveries come from the inventories of local suppliers);

[Claim 6] wherein external inventory comprises at least one of a group consisting of the following:

a supplier inventory; and

a hub inventory (¶ 7 – External deliveries come from the inventories of local suppliers).

As per claims 1 and 8-10, Mukhopadhyay discloses use of the scheduling optimization in a plant that receives parts from various suppliers to manufacture power transformers (¶ 7); therefore, it is understood that the plant must contain at least one manufacturing line. However, Mukhopadhyay does not expressly teach that the plant contains a plurality of manufacturing lines, including manufacturing lines that are either located in at least two factories or manufacturing lines that are in one factory, and wherein at least two operations are on one manufacturing line of the plurality of manufacturing lines. First, *Ex parte Pfeiffer*, 135 USPQ 31 (BdPatApp&Int 1961) states, "As to the rejection of the claims on the prior art references, we do not agree with the appellant that such structural limitations as are not disclosed by the references should be given patentable weight. This argument is applicable to claims drawn to structure and not claims drawn to a method. **To be entitled to such weight in method claims**, the recited **structural limitations** therein **must affect the method** in a manipulative sense and not to amount to the mere claiming of a use of a particular structure, which, in our opinion, is the case here." Whether or not there are a plurality of manufacturing lines versus one single line does not affect the structure or functionality of the claimed invention; therefore, said limitation does not merit patentable weight. Second, even if such limitation were deemed to merit patentable weight, the Examiner asserts that it is old and well-known in the art of manufacturing that many manufacturing facilities

contain multiple manufacturing lines, located at the same or multiple factories, wherein at least two operations are on one manufacturing line of the plurality of manufacturing lines. This distribution of manufacturing functions throughout various manufacturing lines, located either in one facility or multiple facilities, assists in more rapidly and cost-effectively assembling large quantities of sub-portions of an item to eventually create large quantities of the whole item. Since Mukhopadhyay is directed to making the manufacturing process (e.g., of power transformers) more cost efficient, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to adapt Mukhopadhyay's scheduling optimization process to address scheduling among manufacturing facilities containing multiple manufacturing lines, located at the same or multiple factories, wherein at least two operations are on one manufacturing line of the plurality of manufacturing lines in order to further optimize the distribution of manufacturing functions throughout various manufacturing lines, located either in one facility or multiple facilities, thereby assisting in more rapidly and cost-effectively assembling large quantities of sub-portions of an item to eventually create large quantities of the whole item.

Regarding claim 11, Mukhopadhyay discloses use of the scheduling optimization in a plant that receives parts from various suppliers to manufacture power transformers (¶ 7); however, Mukhopadhyay does not expressly teach that "the material requirement is for material for manufacturing a computer system and the available inventory includes material for manufacturing the computer system." Official Notice is taken that it is old and well-known in the art of manufacturing to mass produce computer systems. Both

power transformers and computer systems require the assembly of multiple parts; therefore, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to adapt Mukhopadhyay's scheduling optimization in a plant wherein "the material requirement is for material for manufacturing a computer system and the available inventory includes material for manufacturing the computer system" in order to reap the benefits of this scheduling optimization methodology in a wider range of environments, thereby making such an optimization methodology more marketable and useful to a broader base of customers.

[Claims 17-20] Claims 17-20 recite limitations already addressed by the rejection of claims 1-4 above; therefore, the same rejection applies.

Furthermore, Mukhopadhyay discloses that the breakdown of parts required and delivery schedules are sent to the suppliers daily (¶¶ 7, 48) and the scheduling is optimized using a PC (¶¶ 8, 14, 46, 48); therefore, it is understood that a processor and memory are used to perform the functionality recited in claims 17-20.

[Claims 22-25] Claims 22-25 recite limitations already addressed by the rejection of claims 1-4 above; therefore, the same rejection applies.

Furthermore, Mukhopadhyay discloses that the breakdown of parts required and delivery schedules are sent to the suppliers daily (¶¶ 7, 48) and the scheduling is optimized using a PC (¶¶ 8, 14, 46, 48); therefore, it is understood that a computer program product is used to perform the functionality recited in claims 22-25.

[Claims 27-30] Claims 27-30 recite limitations already addressed by the rejection of claims 1-4 above; therefore, the same rejection applies.

Furthermore, Mukhopadhyay discloses that the breakdown of parts required and delivery schedules are sent to the suppliers daily (¶¶ 7, 48) and the scheduling is optimized using a PC (¶¶ 8, 14, 46, 48); therefore, it is understood that a signal is used to perform the functionality recited in claims 27-30.

[Claim 12] Mukhopadhyay discloses a method for scheduling deliveries of material comprising the step of obtaining a material requirement for an operation of at least one operation on a manufacturing line, the material requirement comprising an identified material and a material need-by time (¶¶ 7, 48). Mukhopadhyay also presents an optimization scheme for insuring that various trucks make their parts deliveries at a precise need-by time – not too early and not too late (¶¶ 9-48). Optimizing delivery times minimizes the costs associated with the storage of parts that arrived too early, lost time incurred by trucks waiting to use the single loading dock at the manufacturing site, delay in manufacturing due to a late delivery of needed parts, etc. The goal of the optimization algorithm is to schedule deliveries such that parts needed earlier arrive before parts needed at a later time and that all parts arrive as close as possible just prior to the point in the manufacturing cycle during which they will be utilized. Mukhopadhyay's optimization strategy is addressed more from the point of view of the manufacturer who has ordered parts from various suppliers; therefore, from the manufacturer's view point, the optimization system performs the steps of identifying a

next truck scheduled for delivery to the operation, determining whether a following truck scheduled for delivery to the operation after the next truck has a material delivery time before the material need-by time of the material requirement, and when the following truck has a material delivery time before the material need-by time, delaying processing of the material requirement, and when the following truck has a material delivery time after the material need-by time, determining whether a later opportunity to request the identified material exists (i.e., if a delivery is not needed until later, it is requested that the identified material not be delivered until the later time at which it is needed), and when a later opportunity exists, delaying requesting the identified material and scheduling a delivery of the identified material (i.e., if a delivery is not needed until later, it is requested that the identified material not be delivered until the later time at which it is needed).

However, Mukhopadhyay's optimization strategy does not expressly address how suppliers schedule the dispatch of their loaded trucks from the suppliers' respective locations. For example, the truck dispatched from a supplier with parts A and B may or may not necessarily be the truck that actually delivers parts A and B to the manufacturer's site; there could be a consolidation of shipments, transfer to another mode of transportation, etc. before the time the parts leave the supplier and arrive at the manufacturer. Even if a single truck is used throughout the delivery process of given parts from supplier to manufacturer, that truck may schedule earlier deliveries of other shipments to other destinations before arriving at the manufacturer. In other words, the fact that a delivery is scheduled earlier or later at a manufacturer's location does not

necessarily mean that the truck arriving at the manufacturing site was dispatched from the supplier after another truck that arrived earlier. Addressing the limitation of "identifying a next truck scheduled for delivery to the operation, *the next truck originating at a material source*," Mukhopadhyay does teach that "[l]ocal suppliers of raw materials were developed within a radius of 30 miles of the plant" (¶ 7). With such a relatively small area to cover from a delivery aspect, the Examiner asserts that a supplier would likely transport the ordered raw materials on a single truck since the cost of consolidating shipments from various trucks already in-transit (e.g., the cost associated with meeting at a cross-docking location, physically moving and tracking the materials from one truck to another, etc.) would most probably exceed that of dispatching a single truck delivery within such a small radius. Therefore, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to utilize Mukhopadhyay's scheduling algorithm under the principal assumption that the next truck scheduled for delivery to the operation is the next truck *originating at a material source* since with such a relatively small area to cover from a delivery aspect (a 30 mile-radius within the manufacturing plant), a supplier would likely transport the ordered raw materials on a single truck since the cost of consolidating shipments from various trucks already in-transit (e.g., the cost associated with meeting at a cross-docking location, physically moving and tracking the materials from one truck to another, etc.) would most probably exceed that of dispatching a single truck delivery within such a small radius.

Furthermore, Mukhopadhyay does not expressly teach that when a later opportunity does not exist, the step of requesting the identified material by adding the identified material to a material request for the next truck and scheduling a delivery of the identified material from the material source to the operation on the next truck. However, Mukhopadhyay does state that freight consolidation has been used with JIT manufacturing to try to lower shipping costs (¶ 4). Freight consolidation may occur at various stages in the delivery cycle, including at the supplier's location. Consolidating shipments at a supplier's location allows one to more efficiently minimize the number of trucks needed to make the maximum number of deliveries in a timely fashion. Since freight consolidation is a common cost-reducing tactic utilized by shippers, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify Mukhopadhyay to perform, when a later opportunity does not exist, the step of requesting the identified material by adding the identified material to a material request for the next truck and scheduling a delivery of the identified material from the material source to the operation on the next truck in order to allow the supplier to more efficiently minimize the number of trucks needed to make the maximum number of deliveries in a timely fashion, thereby lowering shipping costs while effectively meeting the delivery requirements of the manufacturer.

[Claims 13-15] Claims 13-15 recite limitations already addressed by the rejection of claim 12 above; therefore, the same rejection applies.

Furthermore, Mukhopadhyay discloses a method for scheduling deliveries of material comprising repeating a series of steps, the series comprising obtaining a material requirement for an operation on a manufacturing line *from a plurality of material requirements*, each material requirement of the plurality of material requirements comprising an identified material and a material need-by time (¶¶ 7, 48), as per claim 13.

Regarding claims 14 and 15, Mukhopadhyay's optimization strategy is repeated at least daily and whenever a change affecting the schedule occurs (¶¶ 7, 14, 48) in order to constantly keep the scheduling strategy running as close to optimal conditions as possible in light of the most current circumstances; therefore the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to repeat all of the steps recited in claim 13 at a fixed time interval (claim 14) or essentially continuously (claim 15) in order to constantly keep the scheduling strategy running as close to optimal conditions as possible in light of the most current circumstances, thereby reaping the greatest cost benefits of such an optimization.

[Claim 16] Claim 16 recites limitations already addressed by the rejection of claims 12 and 13 above; therefore, the same rejection applies.

[Claim 21] Claim 21 recites limitations already addressed by the rejection of claims 13 and 16 above; therefore, the same rejection applies.

Furthermore, Mukhopadhyay discloses that the breakdown of parts required and delivery schedules are sent to the suppliers daily (¶¶ 7, 48) and the scheduling is optimized using a PC (¶¶ 8, 14, 46, 48). The use of a PC is cited as providing extremely fast processing of the optimization algorithm (¶¶ 8, 14, 46, 48). In general, the Examiner asserts that it is old and well-known that the use of a PC is beneficial in performing calculations more accurately and quickly than they would be performed by hand, especially when the calculations involve such complex algorithms and analysis as that disclosed by Mukhopadhyay. Since Mukhopadhyay already suggests the benefits of use of a PC, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify Mukhopadhyay to perform all of the recited steps using a PC (including a memory and processor) in order to perform the recited calculations and analysis more accurately and quickly than they would be performed by hand.

[Claim 26] Claim 26 recites limitations already addressed by the rejection of claims 13 and 16 above; therefore, the same rejection applies.

Furthermore, Mukhopadhyay discloses that the breakdown of parts required and delivery schedules are sent to the suppliers daily (¶¶ 7, 48) and the scheduling is optimized using a PC (¶¶ 8, 14, 46, 48). The use of a PC is cited as providing extremely fast processing of the optimization algorithm (¶¶ 8, 14, 46, 48). In general, the Examiner asserts that it is old and well-known that the use of a PC is beneficial in performing calculations more accurately and quickly than they would be performed by

hand, especially when the calculations involve such complex algorithms and analysis as that disclosed by Mukhopadhyay. Since Mukhopadhyay already suggests the benefits of use of a PC, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify Mukhopadhyay to perform all of the recited steps using a PC (including a computer program product) in order to perform the recited calculations and analysis more accurately and quickly than they would be performed by hand.

[Claim 31] Claim 31 recites limitations already addressed by the rejection of claims 13 and 16 above; therefore, the same rejection applies.

Furthermore, Mukhopadhyay discloses that the breakdown of parts required and delivery schedules are sent to the suppliers daily (¶¶ 7, 48) and the scheduling is optimized using a PC (¶¶ 8, 14, 46, 48). The use of a PC is cited as providing extremely fast processing of the optimization algorithm (¶¶ 8, 14, 46, 48). In general, the Examiner asserts that it is old and well-known that the use of a PC is beneficial in performing calculations more accurately and quickly than they would be performed by hand, especially when the calculations involve such complex algorithms and analysis as that disclosed by Mukhopadhyay. Since Mukhopadhyay already suggests the benefits of use of a PC, the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to modify Mukhopadhyay to perform all of the recited steps using a PC (including a signal) in order to perform the recited

calculations and analysis more accurately and quickly than they would be performed by hand.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mukhopadhyay ("Optimal Scheduling of Just-in-Time Purchase Deliveries"), as applied to claim 5 above, in view of Jenkins et al. (US 2002/0188499).

[Claim 7] As per claim 7, Mukhopadhyay does not expressly teach that materials delivered from available inventory are selected from an in-transit inventory. However, Jenkins teaches the tracking of available materials throughout a supply chain, including in-transit inventory, in order to quickly resolve conflicts with respect to product availability when they arise (¶¶ 7-8). Since Mukhopadhyay's scheduling optimization is applied to a just-in-time (JIT) manufacturing environment (in which perfect timing of the arrival of needed materials is crucial for the reasons discussed above), the Examiner asserts that it would have been obvious to one of ordinary skill in the art at the time of Applicant's invention to adapt Mukhopadhyay to schedule the delivery of materials from available inventory, including in-transit inventory, in order to facilitate the quick resolution of conflicts with respect to product availability when they arise, thereby minimizing any negative impact to the JIT manufacturing plans when such conflicts arise.

(10) Response to Argument

Appellant argues that Mukhopadhyay does not teach or suggest "*the material requirement being based upon customer orders*, and scheduling delivery of material *to*

meet the material requirement from an available inventory of material to the operation on the manufacturing line" (page 5 of the Appeal Brief) The Examiner respectfully disagrees. In ¶ 7, Mukhopadhyay discloses, "The plant manufactures power transformers for industries and utility companies"; therefore, all manufacturing is performed in response to customers orders. In other words, the nature of the customer orders establishes the material requirement, especially in a just-in-time, or "pull", environment (which is the principle environment disclosed by Mukhopadhyay). Any material delivered to the manufacturing line must be "available" in order for the manufacturing to begin.

Appellant argues that "Mukhopadhyay, taken alone or in combination, does not teach or suggest a method for scheduling deliveries of material which includes determining whether a following truck scheduled for delivery to an operation after a next truck has a material delivery time before a material need by time, much less *when a following truck has a material delivery time after the material need-by time, determining whether a later opportunity to request the identified material exists*, and *if a later opportunity exists, delaying requesting the identified material* and scheduling a delivery of the identified material, and if a later opportunity does not exist, requesting the identified material by adding the identified material to a material request for the next truck and scheduling a delivery of the identified material from the material source to the operation on the next truck, all as required by claim 12." (Page 6 of the Appeal Brief) In response to Appellant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on

combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In the instant argument, Appellant makes an allegation of patentability without explaining in detail why Mukhopadhyay allegedly does not address the recited limitations. Furthermore, the art rejection of claim 12 includes a very in-depth analysis supporting the Examiner's submission that it would have been obvious to one of ordinary skill in the art at the time of Appellant's invention to modify the teachings of Mukhopadhyay in light of Mukhopadhyay's own disclosure as well as knowledge generally available to artisans of ordinary skill in the art at the time of Appellant's invention to yield the claimed invention. Appellant only makes a blanket assertion that Mukhopadhyay does not teach the limitation in question, yet Appellant has not challenged any of the Examiner's specific line of reasoning asserting the obviousness of the modification of Mukhopadhyay in light of knowledge generally available to those skilled in the art; therefore, it is unclear upon which basis Appellant makes such an assertion. The Examiner respectfully refers Appellant to the art rejection of claim 12 above for an explanation of Examiner's position regarding the respective argument.

Similarly, regarding claims 13-16 and 26-30, Appellant broadly asserts that various features are not addressed by the prior art, yet Applicant provides no support for such assertions (pages 6-7 of the Appeal Brief). Since these claims are rejected under 35 U.S.C. § 103(a), it is not clear which specific aspects of the art rejection Appellant takes issue with (e.g., source of teachings, motivation to combine). The Examiner has set forth her position in the art rejection, thereby addressing these features in question.

As per claim 7, Appellant argues, "Neither Mukhopadhyay and Jenkins, taken alone or in combination, do not [sic?] teach or suggest a method for scheduling delivery of material to a manufacturer with a plurality of manufacturing lines which includes determining a material requirement for an operation of at least one operation on a manufacturing line of the plurality of manufacturing lines, *the material requirement being based upon customer orders*, and scheduling delivery of material *to meet the material requirement from* ***an available inventory of material*** *to the operation on the manufacturing line where the* ***available inventory*** *includes* ***in-transit inventory***, all as required by claim 7." (Pages 7-8 of the Appeal Brief) Again, in response to Appellant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In the instant argument, Appellant makes an allegation of patentability without explaining in detail *why* the *combination* of Mukhopadhyay and Jenkins allegedly does not address the recited limitations. The Examiner respectfully refers Appellant to the art rejection of claim 7 above for an explanation of Examiner's position regarding the respective argument.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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